STATEMENT OF
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TENNESSEE ASSOCIATION OF UTILITY DISTRICTS
NATIONAL RURAL WATER ASSOCIATION
THE SUBCOMMITTEE ON WATER RESOURCES AND ENVIRONMENT
U.S. HOUSE OF REPRESENTATIVES
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Thank you Mr. Chairman and Members of the Subcommittee for the opportunity to testify today. I am Ralph McCarter, the General Manager of the First Utility District of Knox County (First Knox) Tennessee – my utility could be called a large, small water and wastewater utility. I will explain that title in a minute. I am here representing my community, my state rural water association, and the National Rural Water Association which represents over 23,000 small and rural community water and sewer suppliers.

I labeled my utility a large, small water and waste water supply. First Knox serves 28,600 water connections and 25,500 wastewater connections (multiply those numbers by approximately 2.5 to calculate the population). In 1954, a local civic organization started the utility to provided pipe water to a rural area in Tennessee that had no previous water service. The district started with 700 connections of mainly farmers and other rural homes. Today, our water infrastructure includes a 21 million gallons per day (MGD) filtration treatment works that relies on water from the Tennessee River. For wastewater treatment, we operate a 1995 state of the art, 15 MGD oxidation ditch system that is reliable in meeting our National Pollution Discharge Elimination Systems (NPDES) permit under the Clean Water Act.

Mr. Chairman, perhaps the most important fact that policy-makers should consider in determining water funding programs is that most all water and wastewater suppliers are small. Of the approximate 54,000 community water systems in the country, over 50,000 serve populations under 10,000.

U.S. Community Water Systems Size by Populations (Source U.S. EPA)

	500 or less	501-3,300	3,301-10,000	10,001-100,000	Over 100,000	Total
# of systems	31,262	14,241	4,498	3,432	350	53,783
% of systems	58%	26%	8%	6%	1%	%100

Small communities have a fundamentally different experience and ability in dealing with country's regulatory and funding programs. This point is addressed later in my testimony, but as you can see from the chart above, my utility is larger than about 90% of systems in the country – yet it is only a fraction of the size of the rest of the utilities represented at this hearing. This is why I referred to my systems as a large, small utility.

First Knox currently needs funding for a number of projects including:

- $4.7 million to extend waste water service to 3,000 residents in our neighboring county (Loudon County). Many of these residents are low-income and we are planning on receiving up to $3.0 million of the total from the U.S. Department of Agriculture's Rural Water grant and loan program.

- $20 million to handle the growth of our community. In order to continue to have the capacity to serve our district for the coming years, we are planning to expand the water treatment facilities from 21 MGD to 34 MDG. A portion of this project includes expanding service to Roane and Loudon Counties, an area of low-income families who currently do not have public water service.

- $20 million for our sanitary sewer overflow (SSO) prevention effort in the older section of our wastewater collection system to replace and repair pipes that cannot handle extreme wet weather situations – resulting in SSOs into the Tennessee River. Half of this funding is used for a dedicated field team to locate and repair pipes, manholes, valves, joints, etc. The other half would be used for replacing portions of the collection system, including concrete and clay pipes, which were installed in the 1970's and 1980's and now are failing.

- $10 million to expand the capacity of the wastewater treatment system to handle wet weather occurrences. During extreme rain situations, like the 100-year rain event we experienced last February, our system can be overwhelmed. With $10 million, we are planning to install additional holding capacity to hold excessive stormwater and gradually feed it through the plant for treatment

Mr. Chairman, I would like to make a few points on water funding and its relationship to public health and environmental protection. When appropriate, I will try to use my utility or another rural water community as an example.

Determining the Amount of Federal Funding Needed

Cost estimates of the funding needed to sustain a healthy U.S. water supply are staggering. The Water Infrastructure Network, of which Rural Water is a member, estimates an 11 billion dollar a year funding gap over the next 20 years. This estimate is over four times the current combined federal contribution in the USDA, EPA Drinking Water, and EPA Wastewater programs. Mr. Chairman, Rural Water is not the type of organization that can present an accurate cost figure on the future need for funding. However, we can acknowledge the extreme shortfall in both EPA SRF and the USDA water programs, as indicators that the current needs are not being met. The USDA program, which is the core-funding program for small water and wastewater projects, is currently experiencing a 3.2 billion dollar backlog. We believe this is the most accurate indicator of need because all of the systems in USDA's backlog have applied for funding. They have met the requirements of USDA's strict needs requirement (including lack of commercial funding availability and high ratios of water rates to median household income).

According to the USDA, at least 2.2 million rural Americans live with critical quality and accessibility problems with their drinking water, including an estimated 730,000 people who have no running water in their homes (USDA study available on the internet at www.ruralwater.org/water2000.pdf). About five million more rural residents are affected by less

critical, but still significant, water problems, as defined by the federal Safe Drinking Water Act. These problems include undersized or poorly protected water sources, a lack of adequate storage facilities, and antiquated distribution systems. The results of the U.S. Department of Agriculture's (USDA) six-month assessment of the nation's most critical safe drinking water investment needs show that as many as eight million people have critical or serious drinking water quality problems. According to the 1990 Census, there are about 1.1 million people without indoor plumbing (RUS). Today, many rural families are still hauling water to their homes and farms. In La Plata County, Colorado – an area that Rural Water is trying to organize into a rural water district, lack of water is forcing hundreds of families to haul water for their home use and their livestock. Their wells and springs are drying up due to the drought.

Congress Should Prioritizing Funding Where is It Most Needed

Due to a lack of economies of scale, small-town consumers often pay high water and sewer rates. Water bills of more than $50 per month are not uncommon in rural areas. At the same time, the rural areas have a greater percentage of poverty and lower median household income. This results in a very high compliance cost per household in rural systems coupled with an increased inability to pay. The nexus of federal unfunded mandates, the fact that many rural areas have never had adequate water supplies, the need for a reliable water supply to attract and maintain any rural economic health – reflect the typical higher cost of rural infrastructure, and immediate threats to public health often make rural and small communities a priority.

As you craft federal water funding legislation, we urge you to include provisions in both water and wastewater that would ensure communities in the greatest public health and economic need receive prioritization in funding programs.

1. Communities exhibiting the greatest need should receive funding first.
2. Funding should not be limited to making loans because in many situations, small communities will not have the ability to pay back a loan – even with very low interest rates.
3. A minimum portion of the funds should be set aside for small systems. This ensures that a state must set up a process for dealing with small communities. Once established, local pressures and priorities will determine the actual portion directed to small systems, which we expect will often be greater than the minimum prescribed.

All of these provisions were included in some manner in the drinking water state revolving fund – balancing the federal priorities with the state's flexibility to tailor individual programs and discretion on implementation of each these programs. (http://www.ruralwater.org/elmer.htm)

Consolidation and Privatization

Consolidation and privatization are limited solutions for small systems. Consolidation can work in some situations, but only for a small portion of small systems and only when the systems are in close proximity and the economics make sense. Rural Water is the lead proponent of consolidation when it makes sense (when it results in better service for the consumer) and we have consolidated numerous communities in all the states. Consolidation and rationalization that is in the consumers' best interest will happen naturally at the local level regardless of federal policy on the issue. Federal policy that favors consolidation over the locally preferred solution is a step in the wrong direction for consumers (i.e. 42 U.S.C. Sec. 300g-3(h) Consolidation Incentive). Privatization is rarely a less costly solution for very small communities. In the very small communities it is, perhaps, more common to see private systems being transferred to

public bodies so they can obtain better financing and local governmental control. The missions of private water and rural water systems are fundamentally different, the reason being the lack of profitability in sparse rural populations.

Private Water Supplies Receiving Federal Subsidies

Corporate water systems should not be eligible for state revolving funding. Taxpayer subsidies should be prohibited from profit generating companies or companies paying profits for shareholders/investors. Private companies argue that they have to comply with the same regulations. However, they voluntarily chose to get into this "business" and compliance is not the over-riding principle that should be considered in this discussion. We believe that the distinction in mission between public and private is the core principal that should be considered. Private systems are in the business to maximize profit. Public water utilities were and are created to provide for public welfare (the reason why public water continues to expand to underserved and non-profitable populations). This is a significant difference. While we believe that maximizing profit is a noble virtue and as American as safe water, we do not think that taxpayers should help the cause of privately owned systems. In addition, the needs of less affluent public water systems and families with no piped water dwarf the current SRF allocations. The state of Florida has a novel compromise to this issue. Florida limits SRF funds to private water systems less than 1,500 people – ensuring funds are limited to the class of private water systems that did not get into the business as a corporate enterprise. Also, this group of private systems could be included in the state's needs assessment, which determines allocations under the bill.

Technical Assistance

Small systems often have limited technical and administrative resources to deal with operation and maintenance, compliance and navigate through funding programs. They need common-sense assistance in a form they can understand. Many small communities rely on volunteers or part-time administrators to operate their local water supplies. Rural Water uses funding from Congress to provide every small community in every state with the technical resources necessary to supply safe and affordable water. The funding allows small systems access to technical resources needed to operate and maintain water infrastructure and treatment by sharing the resources. As unbelievable as it may sound, Rural Water technicians make ON-SITE contacts with more than 300 water systems each year per technicians. All technicians (Circuit Riders) must be hands-on experts with "in-the-field" experience, and are on the road and in the field every week. This is the only way to truly assist small community officials. All Rural Water technicians work for the communities free of charge. A typical on-site contact could include: ensuring that the water service is protected from terrorism; discovering and repairing a faulty gas chlorination system; assisting a community in removing and replacing water filtration media; training a new operator in the operation of a particular treatment system; discovering engineering or construction errors in a new sewer system; implementing a nonpoint pollution prevention plan; or solving lead and copper rules problems. Often, this type of assistance can save a community thousands of dollars, as well as keeping it in long-term compliance with EPA rules.

Also technical assistance works to save the federal water funding programs money identifying the most economical way for a community to complete its needs. Attached to this testimony are a few examples of this point. As these examples indicate, without the rural water technical assistance, the federal government would be pressed for more funding and, perhaps, more than necessary to solve the problem. Additional examples are available at http://www.ruralwater.org/report2003/chapter5.pdf.

Local Responsibility and Growth

Mr. Chairman, the amount of the "appropriate" federal contribution to local water supplies depends on what one considers the local responsibility to provide and pay for that service. The more you place responsibility on the locals (for paying for service), the lower the federal obligation and cost. Rural Water believes that local governments have the primary responsibility for providing water and sewer service. We only believe that the federal government should subsidize the local community when there is a clear federal welfare interest to increase public health, assist low-income communities, protect the environment, or create economic development. Public health and environmental protection interests are often tied to a federal unfunded mandate, which should also be a priority of federal funding. However, we do not believe that the federal government is responsible for all water funding - and this is why we believe it is critical to target federal funding towards well-defined federal priorities. Due to the unique realities and characteristics of small communities, they are often in greater need of federal subsidies to accomplish federal objectives. This point is further explained in the previous section titled: Congress Should Prioritize Funding Where is It Most Needed. Rural Water does not think the federal government should be paying communities to deal with growth (unless it is to encourage growth through economic development). Growth should pay for growth, which is happening in my county. Developers are responsible for installing the infrastructure within their development and the line extensions to the project. The District collects water and wastewater tap fees to cover the expense of upgrading the treatment plants and improvements to aging infrastructure. Thus, a small utility with limited growth will have limited resources to replace aging infrastructure. In any project that we are applying for federal subsidies (EPA SRF and the USDA Rural Water grant & loan program), we are using the subsidy to fulfill a federal mission. In our case, it is to extend water and sewer lines to disadvantaged communities that would otherwise not be able to provide this service.

Aging Infrastructure

Small communities are experiencing water problems due to aging infrastructure. We commonly see pipes that are decades old that contain outdated materials (clay and asbestos cement pipes) that are failing and resulting in public health and environmental threats. Ruptures in wastewater pipes can lead to sanitary sewer overflows in varying degrees of environmental risk and possibly contaminating water supplies. Inflow and infiltration (I&I) of sanitary sewer systems is a widespread problem in rural and small communities. This can result in communities violating their NPDES permits (especially in wet weather) and cause mechanical facilities to need replacing more often. Aging water distribution lines can leak and cause significant loss of water and energy. In 2003, rural water associations assisted over 6,000 communities with problems of aging infrastructure directly resulting in water loss or I&I problems. The list of these communities is available on the internet at: http://www.ruralwater.org/report2003/chapter5b.doc. An example of such assistance is available in the attachment to this testimony.

Burden of Compliance

In addition to this current need, EPA is proposing more regulations. Many of the regulations will force small towns to come up with millions in financing – many systems will be stressed to comply. I think it is significant to observe a new dynamic in EPA regulations: the regulation of naturally-occurring contaminants and the regulations of operations and maintenance in utilities. The result of this new effort by EPA will be to greatly expand the number of systems forced into costly compliance with EPA rules. For example, very few systems were required to treat for EPA's previous rules on organic contaminants, many with anthropogenic origins. However, the arsenic rule could capture as many as 4,000 communities; this will greatly drive up the demand

for additional funding resources. Upcoming EPA rules that may be expensive in thousands of rural communities include: sanitary sewer overflow enforcement, CMOM, standards for certification of operators, filter backwash, radon, surface water treatment rules, arsenic, disinfection byproducts, ground water disinfection, etc.

Each year the list of regulations grows and the burden on small communities increases. Next year, we are facing new regulations on arsenic (92 Federal Register pages), radon (134 Federal Register pages), and an expanded ground water treatment rule (82 Federal Register pages) in addition to the over 80 regulations (40 CFR parts 141-42) that are currently on the books. For wastewater, EPA is tightening SSO enforcement to increase penalty on smaller and more remote SSOs, which cause communities to spend more to prevent the smallest SSOs.

Complexity of the Application Processes

In the smallest systems, one person may run both the water and sewer system and in some cases communities can only afford a part-time or volunteer operator. This lack of resources makes small systems a challenge for state agencies – the more complicated we make funding programs the more likely the small communities, which need the funds most, will not be able to participate. We urge you to exercise caution for increasing demands on applicants as each new demand makes the process too complicated for small systems and therefore less attractive. We believe that the current review process is fully adequate to ensure repayment of loans, progressive environmental planning, and long-term capacity of applicants.

Comment on Lead in DC Water

The country's water protection program (Safe Drinking Water Act) relies on a uniform regulatory compliance program – at the expense of the judgment of locally elected officials – that is too complex and arbitrary to handle local individual problems. This program was guaranteed to fail because (1) it cannot possibly manage future local crises that were not dreamed of when it was designed and published in the Federal Register, and (2) it does not consider the unintended consequences of its mandates – it operates in a vacuum of reality, and (3) it cannot balance competing local priorities like disinfection by-products and the corrosivity of the water to prevent lead leaching.

These three flaws appear to have contributed to the current situation in the District. Now when there is a crisis that needs civic leadership – no one is responsible. Local judgment was overridden by the federal regulatory system, which was too arbitrary and inflexible to deal with the situation.

These necessary balancing judgments are beyond the capability of static regulations and beyond the abilities of regulators charged only with the enforcement of the specific regulations. Regulators can only regulate the letter of the law, they cannot think beyond compliance – which is critical in determining public health policy. It is essential to realize that meeting regulations is not synonymous with public health protection. In the District example, it is likely that WASA and EPA would have looked at the situation the differently. EPA was forced to focus on enforcement, regardless of unintended consequences. On the other hand, if WASA retained authority, it would have had the discretion to be more concerned with the overall public health implications and the ability to be more cautious in changing water treatment regimes. It is only elected policy makers with the authority to look at public policy in a holistic manner that can balance public health risks. Once the lead levels started to increase, WASA and EPA probably

knew that the higher lead levels were not as alarming as the environmental community and media would claim because of the conservative nature of the standards, and that this may be a temporary problem which the federal public notification requirements would not convey. In all of WASA's actions, it appears that after months of the situation, which EPA was reportedly aware of, WASA claims not to have violated any EPA regulation including the public notification.

Ask yourself who cares more about the health of the children in the District (and is more responsive to those families), the local mayors or an EPA regional employee in Philadelphia? If the mayors, or the regional governments of WASA, had the authority over managing the health policy underlying the water supply – we would likely not be in the situation we are in now because they are elected for the exact reason of managing issues that have many variables and impacts. Mayors can manage the balancing of local priorities in a way that regulatory enforcers cannot. Now you are being asked to give more authority to EPA at the expense of the local mayors.

Congress or EPA can expand the regulatory program and require more federal uniform mandates on locals in response to the District experience. This has been the history of national drinking water legislation. However, this will not solve the problem of drinking water protection because the federal government cannot possibly design a program that foresees the infinite challenges that local communities face in providing safe water. The problem with the Safe Drinking Water Act is that improving drinking water in small communities is more of a RESOURCE problem than a REGULATORY problem. The best way to avoid threats is to have the most educated and responsible local officials overseeing the water supply. We urge you to consider this alternative perspective of local governments and their citizens.

It appears likely that the Stage I rule was the rule that caused WASA to change their treatment to chloramines and resulted in the increase in lead concentrations in the drinking water. The National Rural Water Association is urging EPA to rethink finalizing the Stage 2 Disinfection and Disinfection By-Products (Stage 2) and Long Term 2 Enhanced Surface Water Treatment (LT2) Proposed Rules in light of the recent chloramines study released by the EPA Office of Research and Development. The study concluded that alternatives to drinking water chlorination, such as chloramines, may produce "increased concentrations" of some byproducts.

We are concerned that this rule may result in unintended consequences including exposure to the public of "certain dihalogenated disinfection by-products and iodo-trihalomethanes."

We are particularly concerned by the report's following finding:

> "Important observations included finding the highest levels of iodo-trihalomethanes (THMs) at a plant that used chloramination without pre-chlorination… Another important observation involved finding the highest concentration of dichloroacetaldehyde at a plant that used chloramine and ozone disinfection. Therefore, although the use of alternative disinfectants minimized the formation of the four regulated THMs, certain dihalogenated DBPs and iodo-THMs were formed at significantly higher levels than in waters treated with chlorine. Thus, the formation and control of the four regulated THMs is not necessarily an indicator of the formation and control of other halogenated DBPs,

and the use of alternative disinfectants does not necessarily control the formation of all halogenated DBPs, and can even result in increased concentrations of some. Moreover, many of these halogenated DBPs—including certain dihalogenated and brominated species—were not studied in the ICR."

The proposed rules will likely require a significant number of water supplies to switch from their current disinfection process to chloramines which, according to the EPA's recent findings, may have unknown public health risks and may be more harmful than chlorine.

Attachment – Examples of Technical Assistance

- Alabama, Headland — The Headland Water & Sewer Board, located in Henry County, serves 1,500 connections, which are metered. The system is supplied by groundwater sources. Headland has a certified, full-time Water and Wastewater Operator. The Public Works Director requested the Alabama Rural Water Association Circuit Rider to assist in locating water leaks. It appeared the system was losing a large amount of water. After arriving at the system, the Circuit Rider reviewed with the Operator a plan to listen to the check valves at the wells. Using the Alabama Rural Water Association's leak detector, the Circuit Rider found that three check valves needed replacing. Also, three fire hydrants were in need of repair. The Alabama Rural Water Association was able to save the system $38,102 annually by making the repairs. Due to this process, local system personnel will be able to solve its own problems concerning additional water leaks.

- Arizona, Navajo County — In the first week of November, the Circuit Rider was contacted by a remote Operator in Navajo County regarding a small system that was repeatedly failing routine samples. The samples were showing up coliform positive. A notice of violation had been posted, and the Arizona Department of Environmental Quality was involved. The day after being contacted, the Circuit Rider was at the site discussing the situation with the owners and Operator. An engineering firm had been contracted, and plans for a chlorination system had been drawn up at a cost of $2500. The engineering firm had advised the owner that an additional $4,500 would be needed to construct the chlorination system. This small system serves only 98 customers, and the owners were in no position financially to afford this elaborate design. After an onsite visit to the system, the Circuit Rider made some calculations of pumping rates, and found that a small positive displacement pump was all that was needed for the injection of liquid sodium hypochlorite (until this time, the owners had been climbing the storage tank and pouring in household bleach.) A pump was ordered that day from one of several catalogs provided by the Circuit Rider. A few days later, the pump arrived, and the Circuit Rider was contacted. An onsite visited included the instruction for the full installation of the pump in an existing well house. Calculations were done, and the chlorine injection system was online. The Operator had a chlorine residual test kit, and a training session by the Circuit Rider was also provided for both the owners and the Operator. Two days after the installation, the chlorine residual was dialed in at 0.25. Samples were taken and were coliform negative. The notice of violation was lifted, and the system was returned to compliance. The total cost of the pump and necessary plumbing parts was less that $400. A savings of $4,100 was considerable to such a small system.

- Colorado, Palisade — The Palisade system serves 1,000 connections and the surface water source is metered. The system has a full-time certified Operator, and uses full-time disinfection. On November 30, 2001, the Circuit Rider visited the Palisade Water System to conduct leak detection. The Circuit Rider found a service line leak of approximately 10.8 gallons per minute. Finding this leak will save 15,552 gallons/week of water loss. The area of the leak was close to a house that would have caused damage to the foundation over a period of time, and would have been expensive to repair. The leak was also close to a bluff that could have become unstable and sloughed off, causing considerable loss of property and other damage. Palisade realized a one-time savings of $816.48 and an annual savings of $9,797.76.

- Connecticut, Groton — In January of this year, this the Circuit Rider was asked if he could help train a part-time Operator in preparation for a main extension at a small water system in Connecticut. The Noank Fire District Water Department buys water wholesale from Groton Utilities and then distributes it throughout the District. The system has 1,823 connections and is not metered. Chlorine is added to the system prior to purchase from Groton Utilities. Groton is located on the southern coast of Connecticut, in New London County. The Town has numerous boat yards, one of which was planning to construct a large building for boat repair and maintenance, and would therefore require fire protection. This main extension was to be 450 feet long. The part-time certified system Operator had never done a main extension before and was apprehensive. The Circuit Rider began assistance by going over the AWWA standards with the Operator. The Circuit Rider then met with the boat yard owner, the general contractor, the architect, and the firm actually doing the job. There did not seem to be any plans or drawings to work from. The work was supposedly going to be done according to specs, but there were no specs. The Circuit Rider convinced the Operator of the necessity for drawings and specs, and also told him the standard should be “as builts” upon completion. The job moved along smoothly after all concerned realized who was in charge and what the ground rules would be. The main extension took a period of 1 week to install, flush, chlorinate, and hydrostatically test. The Circuit Rider stopped by on three separate occasions during the installation to ensure that the contractor was following all the rules and regulations. The Operator has had his competency level raised, and is confident about dealing with other main extensions in the future. The Atlantic States Rural Water and Wastewater Association saved the local system about $2,500. The training will be put to use throughout the rest of the year as another main extension is scheduled for this summer. There is no way to calculate an annual savings to the system. The local system sent a letter thanking Atlantic States Rural Water and Wastewater Association for its participation.

- Florida, Mulberry -- The town of Mulberry is a small town in Polk County located in the center of Florida's phosphate mining industries. Most of its residents are low to moderate-income families. Mulberry has a .5 mgd sequential batch reactor with sand filters and disinfection after the biological treatment. Last year Florida was inundated with rain. Mulberry was no exception. The city's operator Florida Rural Water Association's Wastewater Technician, and asked for help in the town's inflow and infiltration study. The town of Mulberry, with the aid of FRWA, began to conduct smoke tests and manhole inspections on the collection system. Eighty-two breaks were discovered and marked for repairs. The total impact of these problems is yet to be known. However, the annual savings is estimated to be around one hundred thousand dollars. The long-term benefits to

the system is the assurance of normal flows, the cost reduction of lower flows, and the avoidance of any fines that may be assessed for being out of compliance.

- Idaho, Ashton — On March 6, 2002, the Idaho Rural Water Association Circuit Rider made contact with the City of Ashton, Idaho. The City of Ashton is located in Fremont County. The City currently serves 525 metered connections, with two deep wells and 300,000 gallons of storage. The City Operator is not currently certified. During a routine visit, the Circuit Rider was asked by the City Clerk to speak to the City Council that evening about the City's water and sewer rates. The Operator had already asked the Circuit Rider to do some preliminary rate work. At the City Council meeting, an engineer gave a proposal for a rate study that would cost $4,500. An additional $300 per visit was to be charged for each visit for public hearings. After the proposal was made, the engineer left, and the Circuit Rider informed City officials that the Idaho Rural Water Association would do the same rate study for no cost. The City officials decided to deny the engineer's proposal. A formal rate study will be prepared and presented the City Council. The Circuit Rider's assistance saved the City of Ashton approximately $4,500 to $5400 in fees, depending on the exact number of public hearings that would be needed and required.

- Illinois, Toluca — The Village of Toluca water system is located in Marshall County and serves 526 connections that are metered. The system is supplied by a groundwater source. Toluca has a certified, full-time water Operator. The Operator requested the assistance of the Illinois Rural Water Association Circuit Rider in locating a leak. It appeared the system was losing approximately 50,000 gallons per day. After arriving at the system, a plan to do a leak detection of the system was established. An Illinois Rural Water Association leak detector was used in this process. After using the leak detection device, four leaks were found. Repairs were made and pumpage was returned to normal. Due to the leak detection survey, the Village of Toluca will save $1,800 per month, with an annual savings of $21,900.

- Indiana, Gosport — The Town of Gosport is located in Owen County and serves 375 connections. The source is groundwater, which is pressure-filtered, disinfected, metered, and sent into the distribution system, where it is metered again at the customer tap. On December 12, 2001, the certified Operator contacted the Indiana Rural Water Association Circuit Rider and requested assistance in locating a water leak in the distribution system. On December 13, 2001, the Circuit Rider arrived at Gosport and met with the Operator. The Circuit Rider was informed that the estimated water loss was approximately 144,000 gallons per day, and that the Town's water plant was operating at its maximum potential of 187,200 gallons per day and just barely keeping up with the demand. The Operator explained that there had not been any sign of water surfacing to locate the area of the leak. The Circuit Rider and the Operator drove around the Town searching for possible signs of the leak and to listen to hydrants and valves with the Indiana Rural Water Association's sonic leak detector to possibly hear where the leak was located. As they were doing this, water had been running down one of the streets. When they arrived at the location, the Circuit Rider 2 checked the area where the water was surfacing and was able to pinpoint the leak location. After the leak was located, the Town workers started digging in the area and discovered a large cavity under the roadway next to a sanitary sewer manhole. It was determined that the water from the leak had run through the fill gravel causing the cavity and into the sewer for some time and finally had surfaced. A 4-

inch main was uncovered which had cracked three quarters of the way around the main. The leak was repaired by cutting out and replacing the section of the main and placing it back into service. The Town's water system was able to recover and operate normally. The long-term benefits provided to Gosport by the Circuit Rider were pinpointing of the leak and saving time and money by being able to dig in the area of the leak instead of searching around. Also, the leak was repaired saving an estimated loss of revenue of $10,000 per month.

- Kansas, Jennings -- KRWA was contacted about a leak in the primary lagoon for the city of Jennings. The city has a 3-cell lagoon system. The system was overbuilt for the size of the city. Jennings has never had enough flow in to the lagoons to utilize all 3 cells. The flow to the system had originally been using the far north cell. This cell over time developed a leak, and the lagoon would not hold the daily flow. The wastewater was then diverted to the east lagoon, and over time this lagoon also developed a leak. After discussion with city councilman, he informed me that the city only had about $4,500 to complete these repairs. KRWA's Wastewater Technician informed him that they could possibly do these repairs with the help of local farmers. The city contacted an engineering firm who bid the project at around $25,000. The city and local farmers purchased bentonite clay and used their own machinery to take out the dried sludge in the north lagoon. They then incorporated the bentonite clay and now are using the north lagoon. They will let the east lagoon dry out and do the same process to it. They will then have 2 lagoons that have been resealed for around $4,500.

- Louisiana, Norwood -- The LRWA Circuit Rider was requested to visit the town of Norwood, as the town was having quite a few problems and didn't know what direction to take. Some of the problems were only one water well (two is the requirement), no master meter (one is needed), and chlorine was being injection into the water main where there was not enough detention time for disinfection. Larger water lines are needed through the town for fire protection. After the visit to the town of Norwood by the LRWA, the town understands the problems, what is needed and where to go for loans and grants for financing.

- Maine, New Portland — On December 10, 2001, at the request of Board members, the Circuit Rider visited with New Portland Water District in Somerset County to help determine a course of action to solve the water supply shortage. This system of 60 non-metered connections had failed microscopic particulate analysis testing in the early 1990s and, with assistance from Rural Development, had installed new wells, pumps, and 50,000-gallon reservoir along with some new piping to withstand slightly higher system pressure. The pumps are normally set to run in 12-hour cycles. But because of drought conditions had been reduced to 8-hour cycles. Even at reduced run times, the wells would occasionally get to the low level and the pumps shut down. It was recently noticed that they were losing reservoir level. Normal meter readings of 8,000 to 9,000 gallons per day had increased to over 10,000 gallons on a couple of days. The Circuit Rider toured the system and property with Board members who regularly monitor the system. The Circuit Rider checked for any possible problems with the existing operation and toured the property owned by the District. The Circuit Rider determined that three courses of action should be pursued to help solve the problem. First, and most important, would be to inspect the units served by the District and make sure customers were not running water to waste to keep pipes from freezing as was expected. This would have to

be done on a regular basis along with another notice to the customers about conservation methods to reduce unnecessary usage. The second action would be to install meters at all customers, and the third would be to develop an additional supply. The Circuit Rider noted that an existing spring, formally utilized by people from neighboring communities as well, and located on District property within easy piping distance to the pump house, was full at a time when everything else is practically dried up. This could be explored as a sight for a third drilled well, and may even flow by gravity to the pump house. The Circuit Rider spoke with his Executive Director who put him in touch with the Director of community development to get the process started for an urgent need grant. The Circuit Rider also contacted the Rural Development program specialist for assistance. He indicated some leftover grant money may be available to get the District started with meter installation and groundwater study. The system should qualify for urgent need grants since it is dealing with conservation measures. By using grant money, the District, which is run entirely by volunteers, would then be able to set aside the necessary funding to contract with a certified Operator. The Circuit Rider also noted that he would work with the State agency to get allowance to use alternative filtration along with present full-time disinfection for the emergency use of the old dug well/spring system that is still running at several gallons per minute into a stream.

- Maryland, Rising Sun — The Maryland Rural Water Association Circuit Rider was requested by the Town of Rising Sun on April 22, 2002 to conduct leak detection. The Town is a Class 2 well system serving 900 plus connections. The system is metered and has full-time Operators. Upon the Circuit Rider's arrival, the Operator explained that the pressure had been dropping for days with no obvious signs of leaks. The Circuit Rider started out in the distribution doing pressure checks and leak detection with no success; there wasn't enough pressure to sound for leaks. At this point, the Circuit Rider realized he had to get the pressure back in the system, but the Town wells were not enough to fill the system. The Circuit Rider suggested hauling water from two other Towns close by. The Circuit Rider made contact with another the Circuit Rider for addition help, and they made contact with the Towns of Port Deposit and Perryville, and at the same time contacted the local fire department. Water was hauled for 26 hours; a total of 530,000 gallons was hauled which filled the Town's water tower. Once the tower was filled and the pressure was back in the system, the Town requested another leak survey. At this point, the Circuit Riders located the leak that caused the problem. It was a 1-inch service break at the main 35 to 40 gpm. The Town fixed the leak and the water pressure started to rise back to normal. The Circuit Riders also managed to help get a new well online, which will help, prevent a problem like this from occurring again. It is difficult to estimate the amount of the one-time savings, but is estimated at $25,000.

- Minnesota, Ashby — Ashby, Minnesota is located in Grant County in central Minnesota. The system consists of a metered ground source, which is filtered and chlorinated. The system serves 136 metered customers and is operated by a certified Operator. Rural Development funded an upgrade to the system 3 years ago. At that time, a new filtration plant was built along with a new water tower and several new water mains in the distribution system. The Operator has called the Minnesota Rural Water Association many times over the years and requested help from the Circuit Riders. During the spring of 2002, the Operator had trouble with the chlorination system in the new facility. He has been replacing the 150-pound cylinders without any problems for the past 2½ years. This past spring, as he was changing cylinders, he was exposed to chlorine gas four times.

The City finally decided to switch vendors and chlorine equipment. This company has regular routes and will stop by on a monthly basis. The company will switch the equipment in the near future at no cost to the City of Ashby. This recent dilemma is just another problem that has occurred with this system. Since the start up of this facility, the Operator has had to baby-sit the filtration system. The amount of chlorine and potassium permanganate being used was high, and each of the two filters seem to use different amounts of chemicals. Of course, with a new facility, the City Council was concerned with the amount of time being spent in a new plant and the quality of the product. Water was also fluctuating. On March 28, 2002, the Circuit Rider once again stopped in to see how things were going. The Circuit Rider was glad to hear that the chlorine problem was under control, but was still concerned about the quality of the product coming out of the filters. After almost 3 years of babysitting this plant, the Circuit Rider suggested something radical—to cut the plant in half. The old filtration system was designed for 90 gallons per minute and the new filters are rated for 250 gallons per minute. By using only one of the filters at a time, one still has a capacity of 125 gallons per minute. This rate will still meet the demand of the system and will allow more water through the filter. The Circuit Rider feels that the water in the filters was just sitting there for up to 20 hours per day. By cutting the rate of production, the filter will run a small amount of time more, but will put out a better product. The filters were split on the March 28. The Circuit Rider stopped in on the morning of April 1, 2002, and was met by a happy Operator. He also expects the system should be more efficient. The iron was being reduced to 0.1 mg/l and the manganese was tested at 0.02 mg/l. The secondary standards for iron removal is 0.3 mg/l and 0.05 mg/l for manganese. The Circuit Rider was thinking about the filtration system in Ashby over the weekend. The Operator had mentioned that he would alternate the filters every two weeks. On April 1, 2002, the Circuit Rider suggested alternating the filters on a weekly basis. This way the water in the filters should stay in better shape and not become too stagnate. The long-term benefit to the City of Ashby should be a better product coming out of the filters and a reduction of chemical use. The Circuit Rider also met with Rural Development and suggested that the neighboring City of Dalton should be contacted to also utilize Ashby's system for its water needs. What this would do is push more water through the system and keep the filters more active. The Circuit Rider would assist Rural Development in promoting this thought with the City of Dalton.

- Mississippi, Port Gibson -- The city of Port Gibson had been out of compliance on a few occasions in the last year or so. The city had been out on BOD, TSS, and flow. Their permitted flow is 0.6 mgd. With a population of 5,200, some business, and industry, it is not surprising that the city exceeds 0.6 mgd on occasion. The city needed to be able to increase their permitted flow, while at the same time be able to get the effluent BOD and TSS down. The city was looking into building an artificial wetland to enhance the treatment already provided by the existing facultative lagoon. The big snag was how to get back into the existing chlorine contact chamber. The Circuit Rider visited the system and was surprised at his findings. The lagoon was big. It covered almost 14 acres. Usually, when an aeration upgrade is attempted, the lagoon is shallow and small. As a result, the aerators churn up the bottom, then there is not enough space to let it settle back out. However, this was not the case here. This lagoon seemed to be designed through an upgrade, as an aerated lagoon. The depth was the needed eight feet instead of the usual four to six feet deep for a facultative lagoon. The lagoon had two floating curtains to maximize detention time and form a settling basin on the end for algae removal. It even

had a nice concrete contact chamber with a cascade to raise the dissolved oxygen after the duckweed took it out along with the algae. The only real drawback that Circuit Rider could find was the location of the influent piping. It split on the levee and emptied in two places. Neither place was correct. One of the two pipes actually ran out toward the effluent. It was suggested that he plug that pipe off in the manhole where the flow split. The Circuit Rider created an application on his computer to be able to calculate lagoon loading, detention time, required number of aerators, aerator horsepower and a few other things. He was able to play 'what if' with the input values. The application could even project what the effluent BOD would be. With this, they were able to quickly analyze the existing setup and project what would be needed to get the job done. The cost of adding an artificial wetland to the end of the existing lagoon would cost about $600,000. That wetland figure does not include building another chlorine contact chamber with post air. The five aerators would cost about $50,000 and the existing chlorine contact chamber with post air could still be used. The artificial wetland is advertised to operate cost free. However, the Circuit Rider commented that he had yet to see one that operated like it should for free. The aerators will require electricity, but all will not have to run 24 hours a day.

- North Dakota, Kensal -- The Wastewater Technician for North Dakota Rural Water Systems Association, stopped in the city of Kensal and made a routine visit with the auditor. The area had been through a long winter and several previous wet years causing high water levels. The auditor initially didn't indicate that there were any problems. As the technician continued his inquiry, he began to feel less intimidated as to what NDRWSA was all about. He eventually asked the technician to accompany him to the lagoon site. He said that they had not discharged for many years due to the small size of the city and he felt that evaporation would take care of it. He stated that the previous mayor 'may have let some out once'. He also mentioned that the current operator was certified but was working at another city. Upon reaching the lagoon site, they encountered the unexpected; the lagoon was full to the brim, literally one flush from disaster. The Wastewater Technician immediately called the state health department so that the city of Kensal could request an emergency discharge, which was granted. The next morning, he obtained a sample from the city and it was transferred to the state lab. During the follow-up visit, the system was back in compliance. There was minimal damage to the dikes, and the pumps in the lift station were working less. The city was very grateful, and indicated he would send a letter of appreciation. The Wastewater Technician was able to teach personnel from the city of Kensal what to do in an emergency situation and also the importance of system maintenance. As a result, the relationship with NDRWSA and the North Dakota state health department was improved. The system didn't encounter any extensive damage, which could have happened had any more water been introduced or lift station failure had occurred. The system saved approximately $10,000 in fines for illegal discharge and $5,000 for dike or lift pump repairs, in addition to the inconvenience and scrutiny that would follow an illegal discharge.

- South Carolina, Ninety Six -- The town of Ninety Six requested help solving an inflow and infiltration problem. A smoke test was performed starting in the suspect area. A manhole was found that had an excessive amount of clear water running through it. Further investigation revealed that a two-inch water line had broken and its flow was

getting into the wastewater collection system. Both the water and sewer line have been repaired.

- Florida, Mulberry -- The town of Mulberry is a small town in Polk County located in the center of Florida's phosphate mining industries. Most of its residents are low to moderate income families. Mulberry has a .5 mgd sequential batch reactor with sand filters and disinfection after the biological treatment. Last year Florida was inundated with rain. Mulberry was no exception. The city's operator Florida Rural Water Association's Wastewater Technician, and asked for help in the town's inflow and infiltration study. The town of Mulberry, with the aid of FRWA, began to conduct smoke tests and manhole inspections on the collection system. Eighty-two breaks were discovered and marked for repairs. The total impact of these problems is yet to be known. However, the annual savings is estimated to be around one hundred thousand dollars. The long-term benefits to the system is the assurance of normal flows, the cost reduction of lower flows, and the avoidance of any fines that may be assessed for being out of compliance.